Cumulative Impact Analysis

PORT OF THE AMERICAS

PREPARED FOR**:**

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1.0 Appendix : Cumulative Impact Analysis

Cumulative impacts, whether beneficial, adverse or indifferent, can occur when the effects from a project are added to the effects from other existing projects or facilities. They are caused by the aggregate of past, present and reasonably foreseeable future actions, and represent the total effect, both direct and indirect, on a resource, ecosystem or human community of all actions taken regardless who has taken the action.

The analysis of the cumulative effects from the development of the PTA indicates that there are three potential sources of cumulative environmental impacts:

1. The continued or expanded operation of existing facilities at the ports of Ponce and Guayanilla-Peñuelas;
2. The resumption of operations of facilities presently inactive in the areas near the indicated ports, such as industries; and
3. The construction of new projects in the same vicinities and within the same time frame as the schedule for development of the PTA.

The following sections describe in detail cumulative impacts associated with past, present or reasonably foreseeable future projects in the general area from Ponce to Guayanilla with regards to the scoping issues identified in the SDEIS. Once having performed the scoping component of the cumulative impact assessment, the analysis that follows includes a description of the affected environment and a determination of the environmental consequences associated to the alternatives to the PTA as examined in the SDEIS.

Unless otherwise specified, the geographic scope of this analysis covers the general region of the Playa Ward and Ponce Bay at Ponce, and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively. Also, and unless otherwise specified, the time frame selected for this assessment spans from the present date, or pre-development condition, to the year 2010, when the Project is expected to reach its full development potential and impact in the geographical setting subject to this analysis.

In terms of other past, present, and reasonably foreseeable actions that may impact the Project area, such developments are anticipated to follow the current local zoning requirements, which are, for the most part, compatible with industrial developments, with the exception of a residential area in the vicinity of the Playa Ward in Ponce.

1.1 Cumulative Impacts on Fish and Wildlife Resources

1.1.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- The most significant cumulative impact with regards to fish and wildlife resources are the potential habitat fragmentation caused by multiple land-clearing events for industrial, commercial, and residential developments that could be induced by the Project in Ponce and Guayanilla. However, the areas where such developments would occur have been

classified for such uses and no actions that would jeopardize terrestrial species in the region are anticipated.

- Also, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. These events and their associated risks are discussed in the Supplemental Environmental Impact Statement. Observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.1.3 Main Terminal at Ponce Alternative

- As with the previous alternative, potential habitat fragmentation caused by multiple land-clearing events for industrial, commercial, and residential developments could be induced by the Project in Ponce. However, the areas where such developments would occur have been classified for such uses and no major cumulative impacts are expected with regards to this issue.

- Also, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. Observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.2 Cumulative Impacts on Marine Resources/Special Aquatic Sites

1.2.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce Bay and Guayanilla Bay.

1.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Cumulative impacts with regards to marine resources/special aquatic sites would be caused mainly by a rise in industrial activity in the area. This construction-related surge in stormwater discharges may induce increases in turbidity and sedimentation that would temporarily reduce productivity in the adjacent areas, near shore sea grass beds. These impacts would be of short duration with a rapid recovery after the termination of construction activities. Also, industrial developments may result in an increased sediment delivery to major water bodies from soil erosion and displacement in nearby lots used for industrial operations.

- It is anticipated that point and nonpoint sources of wastewater resulting from future developments will abide to federal regulations as set forth by the National Pollutant Discharge Elimination System (NPDES). Impacts on these resources will be mitigated through adherence to this regulation.

- Also, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. Observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.2.3 Main Terminal at Ponce Alternative

- Cumulative impacts with regards to marine resources/special aquatic sites would be caused mainly by a rise in industrial activity in the area. This construction-related surge in stormwater discharges may induce increases in turbidity and sedimentation that would temporarily reduce productivity in the adjacent areas, near shore sea grass beds. These impacts would be of short duration with a rapid recovery after the termination of construction activities. Also, industrial developments may result in an increased sediment delivery to major water bodies from soil erosion and displacement in nearby lots used for industrial operations.

- It is anticipated that point and nonpoint sources of wastewater resulting from future developments will abide to federal regulations as set forth by the National Pollutant Discharge Elimination System (NPDES). Impacts on these resources will be mitigated through adherence to this regulation.

- Also, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. Observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.3 Cumulative Impacts on Essential Fish Habitat

1.3.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce Bay and Guayanilla Bay.

1.3.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Permanent removal of ocean bottom for dredging or filling purposes, described as part of this alternative, may trigger latent habitat fragmentation impacts on the aquatic flora and fauna in the vicinity of the Project.

- In the Ponce area, the water column serves as essential fish habitat for adult individuals of white grunt and silk snapper. Permanent elimination of a portion of the marine bottom would eliminate the sparse diversity identified at these locations.

- The long-term effects and duration of these impacts are unknown.

1.3.3 Main Terminal at Ponce Alternative

- Permanent removal of ocean bottom for dredging purposes, described as part of this alternative, may trigger latent habitat fragmentation impacts on the aquatic flora and fauna in the vicinity of the Project.

- The water column serves as essential fish habitat for adult individuals of white grunt and silk snapper. Temporary elimination of a portion of the marine bottom through dredging would eliminate the sparse diversity identified at these locations.

- The long-term effects and duration of these impacts are unknown.

1.4 Cumulative Impacts on Threatened or Endangered Species

1.4.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla. It also includes all authorized quarries and fill extraction areas in the south coast, from Guayanilla to Juana Díaz.

1.4.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Cumulative impacts to the Puerto Rican nightjar populations may arise in time as additional quarries are authorized in the region to cope with the demand for extraction material for industrial developments in Ponce and Guayanilla. Local and Federal authorities would coordinate with each individual proponent specific measures to be implemented to preserve nightjar habitat when the need arises, in accordance with Section 7 of the Endangered Species Act.

- It is expected that the Project would result in an increase in the number of ships arriving at the port of as much as 1,200 ships over current shipping levels. This increase in shipping activity would increase the potential for collisions with manatees traversing the Guayanilla Bay and, to a lesser extent, the Ponce Bay.

1.4.3 Main Terminal at Ponce Alternative

- Cumulative impacts to the Puerto Rican nightjar populations may arise in time as additional quarries are authorized in the region to cope with the demand for extraction material for industrial developments in the Ponce area. Local and Federal authorities would coordinate with each individual proponent specific measures to be implemented to preserve nightjar habitat when the need arises, in accordance with Section 7 of the Endangered Species Act.

- At the Port of Ponce, endangered species occur less frequently than in other sectors of the south coast. Manatees have been sighted sporadically in the periphery of the port and the bay, and brown pelicans often fish and rest in the area. Increase in shipping activity would increase the potential for collisions with manatees traversing the Ponce Bay to a lesser extent that in the previous alternative.

1.5 Cumulative Impacts on Ecologically Sensitive Areas

1.5.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.5.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- No cumulative impacts on ecologically sensitive areas are expected as a result this alternative.

1.5.3 Main Terminal at Ponce Alternative

- No cumulative impacts on ecologically sensitive areas are expected as a result this alternative.

1.6 Cumulative Impacts on Wetlands

1.6.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.6.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Cumulative impacts on wetlands in the area would most likely arise from the incremental industrial activities in Ponce and Guayanilla, and could result in potential loss of habitat to plant and animal species that populate coastal and inland wetlands alike.
- Impacts to this resource could occur by partial filling for construction of areas near existing wetlands; degradation by exposure to increased runoff rich in sediments eroded from construction areas; and overall reduced flood control capacity and runoff handling in the project area.
- However, impacts to this resource will be diminished through a “no net loss” policy aimed at providing compensatory mitigation for those areas impacted as part of new developments

1.6.3 Main Terminal at Ponce Alternative

- Cumulative impacts on wetlands in the area would most likely arise from the incremental industrial activities in Ponce, and could result in potential loss of habitat to plant and animal species that populate coastal and inland wetlands alike.
- Impacts to this resource could occur by partial filling for construction of areas near existing wetlands; degradation by exposure to increased runoff rich in sediments eroded from construction areas; and overall reduced flood control capacity and runoff handling in the project area.
- However, impacts to this resource will be diminished through a “no net loss” policy aimed at providing compensatory mitigation for those areas impacted as part of new developments

1.7 Cumulative Impacts on Coastal Zone

1.7.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.7.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

No cumulative impacts on the coastal zone are expected as a result this alternative.

1.7.3 Main Terminal at Ponce Alternative

No cumulative impacts on the coastal zone are expected as a result this alternative.

1.8 Cumulative Impacts on Flooding

1.8.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.8.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

No cumulative impacts on flooding are expected as a result this alternative.

1.8.3 Main Terminal at Ponce Alternative

No cumulative impacts on flooding are expected as a result this alternative.

1.9 Cumulative Impacts on Water and Sediment Quality

1.9.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.9.2 Ponce and Guayanilla: Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Incremental industrial activity of the PTA would induce additional discharges of water pollutants to the Ponce and Guayanilla bays, albeit under controlled conditions that meets current maximum local and Federal standards.

- The construction activities of additional industrial operations in the surrounding project area would cause temporary impacts in the water quality. The principal impacts to the water quality would be the increased delivery of sediments to major water bodies resulting in increased turbidity. Some water quality degradation is expected as a result of non-point runoff from industrial facilities over time and may impact recreational resources within the region.

- It is anticipated that point and nonpoint sources of wastewater resulting from future developments will abide to federal regulations as set forth by the National Pollutant Discharge Elimination System (NPDES). Impacts on these resources will be mitigated through adherence to this regulation.

1.9.3 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Incremental industrial activity of the PTA would induce additional discharges of water pollutants to the Ponce Bay, albeit under controlled conditions that meets current maximum local and Federal standards.

- The construction activities of additional industrial operations in the surrounding project area would cause temporary impacts in the water quality. The principal impacts to the

water quality would be the increased delivery of sediments to major water bodies resulting in increased turbidity. Some water quality degradation is expected as a result of non-point runoff from industrial facilities over time and may impact recreational resources within the region.

- It is anticipated that point and nonpoint sources of wastewater resulting from future developments will abide to federal regulations as set forth by the National Pollutant Discharge Elimination System (NPDES). Impacts on these resources will be mitigated through adherence to this regulation.

1.10 Cumulative Impacts on Air Quality

1.10.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Playa Ward at Ponce and Playa Ward at Guayanilla. It also includes the Tallaboa Ward at Guayanilla.

1.10.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Port-related activities would result in cumulative impacts brought about by expected rise in air emissions from increased vehicular traffic, industrial operations, emergency power generators, and increased ship traffic. These impacts may decrease ambient air quality over time to non-compliance levels.

- Cumulative indirect impacts to the quality of the air from fugitive dust would occur from incremental development of the land for commercial and industrial uses particularly in the areas proposed for value-added activities. New developments shall adhere to state regulations with regards to this issue.

- Major existing air pollution sources include the Costa Sur Power Plant and the Commonwealth Oil Refining Company in Guayanilla; Central Mercedita, Puerto Rico Cement, Serrallés Distillery in Ponce. Individual air quality permits issued by EQB, in compliance with the National Ambient Air Quality Standards, govern the emissions and air quality impacts from these facilities. No adverse cumulative impacts to air quality are anticipated.

1.10.3 Main Terminal at Ponce Alternative

- Port-related activities would result in cumulative impacts brought about by expected rise in air emissions from increased vehicular traffic, industrial operations, emergency power generators, and increased ship traffic. These impacts may decrease ambient air quality over time to non-compliance levels.

- Cumulative indirect impacts to the quality of the air from fugitive dust would occur from incremental development of the land for commercial and industrial uses particularly in the areas proposed for value-added activities. New developments shall adhere to state regulations with regards to this issue.

- Major existing air pollution sources include the Central Mercedita, Puerto Rico Cement, Serrallés Distillery in Ponce. Individual air quality permits issued by EQB, in compliance with the National Ambient Air Quality Standards, govern the emissions and air quality

impacts from these facilities. No adverse cumulative impacts to air quality are anticipated.

1.11 Cumulative Impacts on Cultural Resources

1.11.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in south coast from the Municipality of Ponce to the Municipality of Guayanilla.

1.11.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- No cumulative impacts on cultural resources are expected as a result this alternative.

1.11.3 Main Terminal at Ponce Alternative

- No cumulative impacts on cultural resources are expected as a result this alternative.

1.12 Cumulative Impacts on Socioeconomic Issues

1.12.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in south coast from the Municipality of Ponce to the Municipality of Guayanilla.

1.12.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- The Port of the Americas is expected to have a positive socioeconomic cumulative impact in the south coast. The Project has been designed to stimulate the regional economy during its construction and operation phases. This economic stimulus would result from direct project expenditures on goods, services, salaries, indirect and induced spending, and multiplier effects. Economic impacts differ between the construction and operation phases of the Project in both quantity and tenure.

- The Project would have a beneficial cumulative impact on the local and regional economy as well as on the quality of life of neighboring communities. During construction, about 5,600 direct jobs would be created. Eventually, the elements of the PTA, including potential value-added activities, would generate as many as 10,000 permanent new jobs in the region. The direct and indirect revenues associated with these workers would have a positive effect on the area, where the unemployment rate currently approximates 13%.

- Similar to the construction activities, the operation of the PTA would generate additional tax revenues to the local and overall economy of Puerto Rico. This economic stimulus from the Project, when combined with the benefits from the value-added industries and related operations, would energize the economy of the region, creating jobs and reducing unemployment, thereby increasing the economic index in the south coast municipalities.

1.12.3 Main Terminal at Ponce Alternative

- Impacts related to this alternative are similar to the ones described in the previous section.

1.13 Cumulative Impacts on Hazardous, Toxic and Radioactive Waste

1.13.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in south coast from the Municipality of Ponce to the Municipality of Guayanilla.

1.13.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Beneficial cumulative impacts on hazardous, toxic, and radioactive waste are expected as a result this alternative as additional parcels of land, previously belonging to the petrochemical industrial complex previously operating in Guayanilla and Peñuelas, and now abandoned, could potentially be reused for industrial purposes as part of the proposed action.

1.13.3 Main Terminal at Ponce Alternative

- No cumulative impacts on hazardous, toxic, and radioactive waste are expected as a result this alternative.

1.14 Cumulative Impacts on Dredging and Disposal of Dredged Material

1.14.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in south coast from the Municipality of Ponce to the Municipality of Guayanilla.

1.14.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- No cumulative impacts on dredging and disposal of dredged material are expected as a result this alternative.

1.14.3 Main Terminal at Ponce Alternative

- No cumulative impacts on dredging and disposal of dredged material are expected as a result this alternative.

1.15 Cumulative Impacts on Navigation

1.15.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce Bay and Guayanilla Bay.

1.15.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- The Project is expected to cause cumulative impacts on navigation as a result of proposed action or the alternatives considered. Incremental volume of traffic induced by the industrial and trade activity surrounding the port terminals would increase the maritime risks of accidents involving material damages, spills, fires, and loss of human lives.

- Although the maritime risks associated to the transshipment operation have been quantified deemed small, the incremental volume of maritime activity stemming from the maritime terminal activity would nevertheless increase the probability of collisions and navigation accidents in the Ponce and Guayanilla harbors. However, observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.15.3 Main Terminal at Ponce Alternative

- The Project is expected to cause cumulative impacts on navigation as a result of proposed action or the alternatives considered. Incremental volume of traffic induced by the industrial and trade activity surrounding the port terminals would increase the maritime risks of accidents involving material damages, spills, fires, and loss of human lives.

- Although the maritime risks associated to the transshipment operation, discussed in previous sections, have been quantified deemed small, the incremental volume of maritime activity stemming from the maritime terminal activity would nevertheless increase the probability of collisions and navigation accidents in the Ponce Harbor. However, observance and enforcement of the navigation guidelines established by the US Coast Guard in the region will help mitigate this potential risk.

1.16 Cumulative Impacts on Infrastructure

1.16.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce Guayanilla municipalities.

1.16.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

The Project would cause cumulative impacts on the infrastructure of the region, mostly induced by a rise in the demand for services, utilities and transportation facilities.

- The development of the PTA would induce cumulative impacts on the demand for potable water in the region, mostly drove by an increase in the demand for industrial applications and an expected increase in the residential developments in the area surrounding the Project. Demand surges would become more noticeable during times of high water demand or periods of prolonged drought. However, the water supplies in the region are ample for the current need, and several projects now under development would provide additional water to meet the future demands, including the PTA and its facilities.

- A corresponding increase in wastewater handling capacity is expected as well. However, as previously discussed, the regional waste water treatment facilities in the vicinity of the Project in Ponce and Guayanilla have sufficient capacity to handle the increase in treated volume brought about by the Project as well as the cumulative flows caused by the increase in industrial activity and residential developments.

- With regards to the road network, the existing roads and accesses to the Ponce terminal can handle the induced vehicular traffic without major delays in the initial periods of port operation. Improvements to the existing road network will be needed at the Guayanilla component.

- The Puerto Rico Highway and Transportation Authority is developing several highway projects along the south coast of the Island. The projects have been designed to provide capacity to not only the traffic levels caused by the anticipated maritime transshipment operations, but to handle the cumulative volumes of traffic caused by the industrial activities and domestic users in the region.

- Additional power would be required to meet the initial and long-term demands of the industrial developments associated to the Ponce and Guayanilla terminals. Industrial and commercial activities would require improvements to the existing electric infrastructure and additional electric power, which would not be available for other potential users in the region.

- Finally, an increase in domestic solid wastes generation and handling capacity is expected due to the nature of the Project. However, as previously discussed, the solid waste landfill facility in the vicinity of Ponce, including the Yauco and Ponce landfills have sufficient capacity to handle the increase in solid waste volume induced by the Project as well as the cumulative flows caused by the increase in industrial activity and residential developments in the region.

1.16.3 Main Terminal at Ponce Alternative

- Impacts with regards to this issue are the ones discussed for the Ponce component in the previous section.

1.17 Cumulative Impacts on Marine Currents

1.17.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce Bay and Guayanilla Bay.

1.17.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- No cumulative impacts on dredging and disposal of dredged material are expected as a result this alternative.

1.17.3 Main Terminal at Ponce Alternative

- No cumulative impacts on dredging and disposal of dredged material are expected as a result this alternative.

1.18 Cumulative Impacts on Noise

1.18.1 Baseline Condition

Baseline conditions are determined to be the existing pre-development conditions in the Ponce and Guayanilla harbors.

1.18.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

- Cumulative impacts on noise are expected as part of the proposed action. Port-related activities would result in a rise in ambient noise caused by increased vehicular traffic, industrial operations, emergency power generators, and ship traffic among other sources.

- It is expected that noise levels would increase as the industrial activities flourish in the Ponce and Guayanilla value-added industrial parks. It is expected however, that these levels would fall within regulatory limits for industrial generators and appropriate measures would be established to deter excessive ambient noise generation and propagation at this facilities.

1.18.3 Main Terminal at Ponce Alternative

- Cumulative impacts on noise are expected as part of the proposed action. Port-related activities would result in a rise in ambient noise caused by increased vehicular traffic, industrial operations, emergency power generators, and ship traffic among other sources.

- It is expected that noise levels would increase as the industrial activities flourish in the Ponce value-added industrial parks. It is expected however, that these levels would fall within regulatory limits for industrial generators and appropriate measures would be established to deter excessive ambient noise generation and propagation at this facilities.